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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/773,188 | 01/31/2001 | Truc Duy Nguyen | AUS920000757US1 | 4492 |

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| EXAMINER | |
|---|---|
| NGUYEN, HAU H | |
| **ART UNIT** | **PAPER NUMBER** |
| 2676 | 8 |

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/773,188 | NGUYEN ET AL. | |
| | Examiner | Art Unit | |
| | Hau H Nguyen | 2676 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *10 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 20-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new grounds of rejection.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-11, 13-18, 20-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gannett (U.S. Patent No. 5,790,130) in view of Sethi et al. (U.S. Patent No. 6,600,493).

Referring to claims 1-6, 8-11, 13, 15, 20-25, 27-30, Gannett teaches a method for managing texture data in a texture mapping computer graphics system. The system includes a host computer with a main memory that stores texture data. A hardware device, coupled to the host computer, has a local memory that stores in blocks at least a portion of the texture data stored in the main memory at any one time. The hardware device renders texture mapped images using the texture data stored in the local memory. The method includes the following steps: monitoring the use by the hardware device of the texture data blocks stored in the local memory; tracking the priorities of the texture stored in the main memory; and replacing lowest priority and least recently used texture data blocks in the local memory with texture data blocks needed by the hardware device to render images (removing texture objects) (col. 5, lines 66-67, and col. 6, lines 1-14). It is inherent that the removal of stored texture objects should be halted when no

more texture object is present in the memory resources. Gannett further teach when the hardware driver communicates to TIM (texture interrupt managing daemon) that when a new texture has been requested by the user, the priority of the texture and size of the texture also is communicated to TIM over the socket. TIM then provides a texture identifier to the texture, if available. At that point, a determination is made, depending on the size of the texture and number of MIP map levels of that texture, whether that texture will be stored in the shared memory location (first memory resource) or whether that texture will be stored in TIM's own allocated system software memory location (second memory resource) (col. 10, lines 41-47). Thus, Gannett teaches all the limitations of all the limitations of claim1, except that the allocation of memory to texture object continues if there is not sufficient memory.

However, Sethi et al. teach a method for allocating memory wherein, as shown in Fig. 2, a memory manager driver (not shown) in computer 10 (Fig. 1) makes a determination as to how much memory it will need to execute a given graphics application (client application). The driver then formulates a request for the required amount of memory. Process 29 (executing in processor 17) receives (201) the request and, in response, allocates (202) available portions of graphics memory 22 (first memory resource) to graphics processor 19. This may be done via a memory map. If the amount of available memory in graphics memory 22 (frame buffer) is sufficient to satisfy the request from graphics processor 19 (203), memory allocation process 29 ends. If there is not sufficient available graphics memory (203), process 29 allocates available portions of system memory 21 to make up for the deficit amount of graphics memory (in response to inability of allocating sufficient memory) (col. 2, lines 46-60). Sethi et al. further teach when graphics processor 19 no longer needs the allocated memory (206), it issues an instruction to

process 29. Process 29 then re-allocates (207) the system memory (allocated in 205) to operating system 25. This may be done by re-programming the page table in cache 30 so that system memory is no longer available to graphics processor 19. Process 29 also frees used graphics memory by providing unused graphics memory addresses to a "pool" of available addresses, (which implies removing all objects that have been used). When graphics processor needs additional memory, process 29 is repeated (col. 4, lines 19-31).

Therefore, it would have been obvious to one skilled in the art to utilize the method as taught by Sethi et al. in combination with the method as taught by Gannett in order to give a graphics processor a large amounts of contiguous memory for processing if needed (col. 1, lines 18-21).

In regard to claims 7 and 26, as cited above, Gannett teach the removal of texture data is based upon the priority and history of use of texture data, which implies a comparison is made between the removed texture and a threshold value.

Referring to claim 14, although not explicitly stated, it is implied from reference Gannett that each memory resource (host memory and local memory) has its own texture manager for monitoring texture in order to keep track of priority and history of use.

In regard to claims 16-18, as shown in Fig. 3A, Gannett teaches a plurality of processor for managing texture data, and inherently, a plurality of buses should be included.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gannett (U.S. Patent No. 5,790,130) in view of Sethi et al. (U.S. Patent No. 6,600,493) further in view of Saunders (U.S. Patent No. 5,917,497).

Referring to claim 12, as cited above, Gannett and Sethi et al. teach all the limitations of claim 12, except that the texture manager returns an error when insufficient memory has been allocated.

However, Saunders teaches an algorithm is provided which is able to compute the total memory needed to store a full MIP map based on the first level that is passed to the graphics core as well as on subsequent base map level changes. Each level is then stored into the contiguous memory, if the level is valid, or in a temporary memory location, if the level is not valid. Each time the base level changes, all levels are tested for validity, and the valid levels, are placed into the contiguous memory (col. 4, lines 21-29). As shown in Fig. 2, block 22, if it is determined that sufficient memory could not be allocated 20, an error condition 22 will result.

Therefore, it would have been obvious to one skilled in the art to utilize the method of allocating memory to texture data as taught by Saunders in combination with the teachings of Gannett and Sethi et al. in order to assure that all of the texture data is maintained in contiguous memory (col. 1, lines 24-26).

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hau H. Nguyen whose telephone number is: 703-305-4104. The examiner can normally be reached on MON-FRI from 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 703-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D. C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered response should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Matthew C. Bella

H. Nguyen

05/17/2004

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600